

**REMARKS**

The Office rejects claims 21-24, 29, 30, and 33 and objects to claims 25-28 in the subject application. Claims 1-20, 31, and 32 are subject to restriction. Applicant amends claims 21 and 22. Claims 21-30 and 33 (1 independent claim and 11 total claims) remain pending in the application.

Support for the various amendments may be found in the originally filed specification, claims, and figures. No new matter has been introduced by these amendments. For example, support for amended claims 21 and 22 can be found in Figures 23 and 24 and page 51, lines 19-33 of the subject application.

Reconsideration of this application is respectfully requested.

**35 U.S.C. §112 REJECTION**

The Office rejects claim 29 under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. The Office alleges that the phrase "desired bent shape" is unclear. Applicant respectfully traverses the rejection.

Various embodiments described in Figures 12-15 (pages 37-41) of the subject application illustrate various bent shapes of the acoustic tube and horn. Under M.P.E.P. §2173.05(d), the metes and bounds of claim 29 are clear, because the specification gives examples of the various bent shapes. Thus, Applicant respectfully requests withdrawal of this rejection.

**35 U.S.C. §102 REJECTIONS**

The Office rejects claims 21, 23, 24, and 29 under 35 USC § 102(b) as allegedly being anticipated by Hayakawa.<sup>1</sup> Applicant respectfully traverses the rejection.

Hayakawa discloses an interior sound reproducing device, which locates images at the centers of a driver's seat 5 and an assistant driver's seat 6. First and second dipole sound sources 11 and 12 are mounted on a dashboard 3 and are aligned with the extension lines of the center lines of seat 5 and seat 6.<sup>2</sup> A horn loudspeaker 11a turns (slanting back) towards the outside of the vehicle of an opposite direction. A horn loudspeaker 12a reflects sound by side window 8a so that direct sound almost reaches

<sup>1</sup> JP-06-072253, published March 15, 1994, issued to Kenwood Corp.

a hearing point S2.<sup>3</sup> The directive shaft of horn loudspeaker 12b has reverse sense and reflects the sound emitted from loudspeaker 12b to front window 4 and then to a hearing point S1.<sup>4</sup> When sound from loudspeaker 12a reflects and reaches point S2, an image source 12c is generated. Image source 12c is located in loudspeaker 12a and a symmetrical place on both sides of window 8a.<sup>5</sup> A digital signal processor (DSP) 16 gives a predetermined electrical signal to a power amplification device (in each loudspeaker). The power amplification device drives first and second dipole sound sources 11 and 12.<sup>6</sup>

But Hayakawa fails to disclose "the on-vehicle sound-amplification apparatus is located outside the vehicle interior" as recited in claim 21 (and claims 23, 24, and 29, which variously depend from claim 21). Indeed, Hayakawa discloses an interior sound reproducing device. Consequently, the teachings of Hayakawa are contrary to the claimed invention. Moreover, Hayakawa fails to teach or suggest this missing claimed element. Thus, claims 21, 23, 24, and 29 are patentable over Hayakawa.

### **35 U.S.C. § 103 REJECTIONS**

#### **Hayakawa and Greenberger References**

The Office rejects claim 22 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hayakawa in view of Greenberger.<sup>7</sup> Applicant respectfully traverses the rejection.

With reference to the foregoing discussion in connection with claim 21 and the Hayakawa reference, claim 22 (which depends from claim 21) is also patentable over Hayakawa in view of Greenberger.

Moreover, Hayakawa in view of Greenberger fails to teach, advise, or suggest "the combination of the dipole sound source, the non-directional sound source and the signal processing circuit produce a radiated sound where substantially no direct sound reaches a location in the vicinity of a position of a passenger" as recited in claim 22. As

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<sup>3</sup> Hayakawa, Abstract.

<sup>4</sup> Hayakawa, paragraph 25.

<sup>5</sup> Hayakawa, paragraph 26.

<sup>6</sup> Hayakawa, paragraph 27.

<sup>7</sup> Hayakawa, paragraph 29.

<sup>7</sup> U.S. Patent No. 5,870,484, issued February 9, 1999 to inventor.

discussed above, Hayakawa discloses an interior sound reproducing device, which locates images at the centers of a driver's seat 5 and an assistant driver's seat 6. Hayakawa purposely directs sound to hearing points S1 and S2. Hearing points S1 and S2 are located near the driver and passenger seats, respectively. Thus, Hayakawa teaches away from the claimed invention, namely, to "produce a radiated sound where substantially no direct sound reaches a location in the vicinity of a position of a passenger" as recited in claim 22.

Still further, Greenberger discloses a loudspeaker array for reproducing stereo music and surround sound audio program material for movies and television.<sup>8</sup> Greenberger also discloses automotive sound systems.<sup>9</sup> But Greenberger does not make up for the shortcomings of Hayakawa. The particular aspect relied on in Greenberger is not relevant to the automotive features in Greenberger. Loudspeakers for stereo, movies, and television are not reasonably pertinent to the problem with which the invention is concerned. Loudspeakers for stereo, movies, and television in Greenberger address the problems associated with a listener moving around a room.<sup>10</sup> On the other hand, the present invention addresses "on-vehicle" sound amplification in which the listeners are fixed in a seated position. Accordingly, the problems with a listener moving around a room are not reasonably pertinent to the problems with a listener in an enclosed vehicle in a fixed position. As such, the Greenberger reference is not reasonably pertinent to the claimed invention.

Thus, claim 22 is patentable over Hayakawa in view of Greenberger.

#### **Hayakawa and Dodge References**

The Office rejects claim 30 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hayakawa in view of Dodge.<sup>11</sup> Applicant respectfully traverses the rejection.

With reference to the foregoing discussion in connection with claim 21 and the Hayakawa reference, claim 30 (which variously depends from claim 21) is also patentable over Hayakawa in view of Dodge.

<sup>8</sup> Greenberger, column 1, lines 14-16.

<sup>9</sup> Greenberger, column 89, line 40 to column 94, line 47.

<sup>10</sup> Greenberger, column 1, lines 25-30.

**Hayakawa and Sharp References**

The Office rejects claim 33 under 35 U.S.C. §103(a) as allegedly being unpatentable over Hayakawa in view of Sharp.<sup>12</sup> Applicant respectfully traverses the rejection.

With reference to the foregoing discussion in connection with claim 21 and the Hayakawa reference, claim 33 (which depends from claim 21) is also patentable over Hayakawa in view of Sharp.

**CONCLUSION**

Thus, the Applicant respectfully submits that the present application is in condition for allowance. Reconsideration of the application is thus requested. Applicant invites the Office to telephone the undersigned if he or she has any questions whatsoever regarding this Response or the present application in general.

Respectfully submitted,

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<sup>11</sup> U.S. Patent No. 4,460,061, issued July 17, 1984 to Pennwalt Corporation.

<sup>12</sup> U.S. Patent No. 3,781,476, issued December 25, 1973 to Columbia Broadcasting System, Inc.